Registration of Engineers and Architects

By MR. GARDNER S. WILLIAMS (*)

Mr. Chairman and Members of the Allied Technical Societies of Ohio; before speaking on the particular subject which is assigned to me, I want to take this opportunity to say a word or two about the status of cooperation, that I would have said in discussion of Mr Newell's address this morning, had I been present. You may or may not have been told that during this very time this week, there is going on in Chicago, a campaign under the auspices of the Western Society of Engineers, a movement looking to the virtual amalgamation in that Society, of practically all the Engineers in Chicago, or, perhaps to put in another way, looking to making that Society the representative of all the Engineers in Chicago. It was my pleasure to be present at the meeting of the Campaign Committees last Thursday night and I was greatly impressed to see the room, half as large as this, practically filled with men sitting around tables, working over their lists, which had been carefully prepared from a census taken of the Engineers in Chicago. These lists were passing down the tables and each team was picking out the names that it was able to handle, the expectation being that by the time the lists had gone the full course down one side of the room and back the other, the names would be pretty well taken up.

I may say that on Monday of this week, the Old Michigan Engineering Society revivified itself by holding a meeting of its Directors and receiving applications, I believe, from four local Societies to become affiliated as branches of the Michigan Engineering Society, making it very largely an association of local Engineering Societies throughout the State. There is one peculiarity about the Michigan Society arrangement, that it not only provides for the affiliation of the local Associations within itself, but it also provides for the man who is so far away that he cannot get to any local Association by allowing him to be a member at large of the Michigan Society. It is a feature that is peculiar to Michigan where we have a good many engineers scattered about throughout the State in places where there is not maintained any branch.

But perhaps, greater than all this, in its significance of this spirit of cooperation among Engineers, is the result that has been achieved by the Committees on development of the four National Societies. About two years ago, the leaven began to stir in all four Societies at once, and as most of you know, Committees were appointed to see what they could do to increase the efficiency of each Society. After working over the problem for a year or something more, an invitation emanated from one of the Societies, to the others, to appoint a Committee of Conference. The suggestion was taken up by the other three Societies and such Committees were appointed, their purpose being to discuss, consider and report upon those matters which were of general interest to the profession of Engineering, those which were not restricted to any one particular Society. If anyone had said as much three years ago, certainly five years ago, that it would be possible for representatives of the four National Societies to sit down together and prepare a plan for the general organization of the Engineering profession, to provide for the general welfare work, and have it subscribed to unanimously by the members of the Committees, representing the four Societies, most of us would have thought he was crazy, but such has been the fact.

After a week, or pretty near a week of solid work at Montclair, New Jersey, and the better part of the week in New York some month later, a report was prepared, outlining an organization of the Engineers of this Country, built upon a representation from every local Engineering Society in the Country, combined with the National Societies, to take care of such work as falls outside the scope of the particular organizations themselves. That plan received the unanimous vote of the Conference Committees, and when presented to the Committee on development of the Society of Civil Engineers, probably the most conservative one of the four, it was adopted by the vote of sixteen to four. That report went to the Board of Direction yesterday, and I assume that it will be made public in the very near future, so that I think we can say that right here in this year 1919, the Engineering profession is at last coming back, ceasing to exhaust its energies in various and diverse lines, leading off here and there and everywhere, and is centering its efforts toward the benefit of the profession as a whole.

Now, to get to the subject of the registration or licensing or certification of Engineers, whatever may be our individual opinion as to the desirability of having Engineers licensed or registered or certified or recognized in some way as a class in the Law, whether we believe it is wise or unwise, whether we would vote in favor of it or not, it is coming. And I felt that before Mr. Drayer made his announcement this afternoon.

It was my fortune some ten years ago, at least, to be sitting on the Board of Direction of the American Society of Civil Engineers when the question of licensing of Engineers of the State of New York came up. A Bill had been introduced into the Legislature to license Engineers, and, as a matter of self-defense, the American Society of Civil Engineers, felt that it must do something. The Bill that was introduced was certainly one to which very few of us would subscribe. And it was felt that the American Society of Civil Engineers should present to the Legislature a Bill which, if they had to have one, engineers would be willing to accept. I remember the discussion

(*) See editorial.

on the Bill. We kept at it so long that Mr. Frederick P. Stearns lost his train to Boston that night. And the next day a small Committee spent most of the time in satisfying the representatives of the large Engineering Corporations, headed by J. G. White and Company, that the Bill that was proposed would not work irreparable injury to their organizations.

The Bill was, I believe, submitted at Albany, but, as we hoped, all legislation was blocked. A few years later the matter was again taken up by Committees representing the four National Societies and a Bill, drawn substantially on the lines of the one which had been previously prepared, was gotten out. This Bill never was formally adopted by any of the Societies, but it was held in readiness for use in those communities where a Bill was needed. It is I believe substantially the Bill that has been adopted in the State of Colorado, and I am informed that it was no sooner adopted than rather serious objection was found to it.

The matter of a licensing act for plumbers, for horseshoers, or for blacksmiths, even for physicians, legislation governing the right of an attorney to practice at the bar, is comparatively simple, because a general specification can be drawn which is sufficiently inclusive and sufficiently definite to convey a clear idea of the character of performance which it is intended to license.

In the case of the Engineer the situation is altogether different. The first thing we meet, the first thing that is asked for, is a definition of the engineer, or a definition of engineering. If you can get one of course you can get the other.

That is one of the questions that was considered by the Sub-Committee on Public Affairs of the Committee on development of the American Society of Civil Engineers, and I know that there was a good deal of time spent in trying to work out a definition, and the Committee ended by presenting four. I will read them to you.

The first one is a paraphrase of Tredgold's old definition, and reads:

"Engineering is the science and art of directing the great sources of power in nature to the use and convenience of man."

Note the introduction of the word "science."

The second is:

"Engineering is an art and science. It is a science insofar as physical laws are its basis, and an art insofar as in the application of these laws, and the things designed and constructed develop the spirit of progress, the creation of wealth, and the wellbeing of all peoples. Engineering is generally divided into four major divisions, viz., Civil, mechanical, electrical and mining. The practice of engineering requires knowledge of physical forces and the materials of nature. The professional engineer is one who by reason of special training, education and experience, is qualified to design and direct the construction of engineering work in one or more of the major divisions of engineering."

The third definition which was submitted is:

"Engineering is the creative science and art of applying economically the materials and forces of nature to the use and convenience of man."

That is again a paraphrase of Tredgold's definition.

The fourth definition which was submitted, reads as follows:

"Engineering is the science of industrial effort and the science and art of applying this effort for the welfare of the public. An engineer is one versed in the science and art of industrial effort made for the purpose of public welfare."

Now I submit to you that, in spite of the acumen, the learning and the experience of the dozen or less gentlemen who were engaged in the framing of those definitions, still they do not fit. They do not meet the requirements that we have to have if we are going to really make an intelligent definition of the engineer or of engineering so that it can be applied in an act of a legislature to define who is entitled to practice under that act.

The fact is, gentlemen, that the underlying spirit of engineering is something that is almost indefinable. The word engineer did not come from engine. If we go back to where it did come from, we find that it came from the same root as genius. If we follow that back, we come to the genii, the spirit of things.

To my mind there should be something in the definition of the word engineer that does not appear here. All these things belong there, they are all part of it, but you have not gotten the real idea yet. When some remarkably adroit piece of parliamentary work is done, some act is passed through a legislature, or through a Congress that it was not though possible to be passed, we say, "Who engineered that?" When you find some combination of interest in the mercantile world or in commercial affairs or banking, you wonder who it was who engineered that thing.

There, gentlemen, is the idea. It is that spirit, that guiding impulse, that something that is behind and directs the forces of nature. And as I said once this evening, the greatest force in nature is man. When you get the true definition of engineering and of the engineer, it must somehow incorporate this idea. That is as far as I can go with it. I confess that no one has been able to write a satisfactory definition of either engineering or the engineer.

Therefore, the problem of preparing a suitable bill for the registration of engineers is made far more difficult than in the case of the professions and the trades, which I have already mentioned. If we wish to lay down a specification under which all engineers can register, we will not go much further than the elementary laws of physics, because as soon as we get beyond that, the course and the practice of the engineers begin to diverge. One man is an expert in construction of buildings, another in the construction of moving machines, another in the analysis of minerals, another in the handling of men. A man may be great in one branch of engineering and absolutely incompetent to work in another. So that if you are going to draw a specification that will take them all in,

you can only do it by getting down to the bottom where they are all alike. As soon as you begin to specify that this man must be able to design and direct, you rule out a lot of men who are not designing and directing. As soon as you specify that he must be able to figure a beam, you rule out the class of engineers who have not figured a beam since they were in college. Now, therein lies the objection to nearly all of the registration bills that have been passed. They afford neither protection to the public nor protection to the engineer. Anybody can meet the specifications or else a large number of engineers cannot meet them. And in the administration of the law, it follows that it is done so that anybody can meet them.

There is the problem that is before the legislature or before the engineer who is going to draw registration act that is to be submitted to the legislature. Therein lies the great objection to registration, because very naturally we do not want an act passed which puts us all on a level. We do not want an Act passed which will entitle the man just out of college perhaps or who has been out two or three years to stand on a par with the man who has been thirty or forty years in the profession, to put them both in a situation where we will say that, "That man is a registered engineer and licensed to practice engineering," and "This man is a registered engineer and licensed to practice engineering." The public does not see any difference between them.

The purpose of a Registration Act is twofold. Primarily the purpose of all law is the benefit of the public, not of the particular class, and in thinking of the registration of engineers, we should, I believe, look at it from the standpoint of the public. Unless the Act which we are drawing will confer some benefit upon the public, we have, as good citizens, no right to ask any Legislature to pass it. The engineering profession, gentlemen, does not want to put itself up on the level of the Trade Union. However, much we may admire the force and persistence and the achievement of the Trades Union, if we, as engineers, cannot get in this world that to which we are entitled without adopting those policies, then, gentlemen, I am ready to leave engineering. (Applause)

That brings us to the idea that we must so draw our Bill if we are going to draw one, that it will in some way provide for a limited registration or a definite registration, if you will, that the man who is capable of going out here and laying out a highway and saying how deep the ditches should be on the side of it and what curve the surface should have and what grades should be put in there and so on, is certainly entitled to be registered, but he should be registered for the thing which he can do. He should not receive a registration which will permit him to go down here and design a railroad bridge. The man who is an expert in electrical engineering, however expert he may be, should not be qualified thereby of work in mining. And so we go.

I took occasion to examine the divisions in the so-called recognized branch of civil engineering and I found that the engineers who passed under the name of civil engineers, divided themselves up into no less than twenty different classifications, representing different degrees of ability and different branches of work, and that a man who is qualified in one of those branches may be very properly denied qualifications in the other ninteen. Of course there are a great many of them that come together. Let us take for example, municipal engineering, a branch of civil engineering. I would say that the man who is qualified in municipal engineering must be qualified in highway engineering. He must be qualified in the subject of streets and pavements. He should be qualified in matters of sewerage, not of sewerage disposal but of sewerage. He must be qualified in the elementary matters pertaining to water supply or water works construction. There you bring no less than four of the sub groups into one and the man who is qualified in municipal engineering would cover all those four groups. He also should know something of bridges, which would bring in possibly the fifth class. You can go up the scale, and finally as you get to the top, I would say in my judgment, there are very few men in the United States who would be really qualified to be registered as civil engineers, understanding the word to be all inclusive of those things which come within the scope and which are recognized to be a part of civil engineering.

I am not so familiar with the other branches of engineering, but I do not think that they are quite as diversified. There are in mechanical engineering at least a half a dozen I can think of. In electrical engineering, there are three or four different branches wherein a man may be an expert and still lack the qualifications to perform the work in other branches of the group.

Those are the ideas that we have got to get into a Registration Act in order to have it a protection to the public and in order that it will do jusice to ourselves.

So far as I know, the Act prepared last winter and passed by the last session of the Michigan Legislature is the only one that has thus far made an attempt at this kind of differentiation. My part in that work, like a good many other things I have done in the engineering profession, was in a considerable measure forced upon me.

Of course this question of licensing or registration of engineers is one which is in general of more interest to the civil engineer than to any of the other professions. The mechanical engineer is generally fortunate in that his client knows a good thing when he sees it. He is very largely employed by corporations who have means of ascertaining who are qualified and who are not, and we do not hear of many great mistakes made in the employment of mechanical engineers. The electrical engineer stands very much in the same place. His employer is usually a corporation or an individual that has an opportunity to inqire and satisfy himself as to the qualifications of the man he has to employ. And the mining engineer stands in practically the same situation. But the civil engineer unfortunately serves the dear pub-

lic, and the dear public is not judicious at all times. It is only once in a while that a community, like one I heard of this afternoon, employes the man who submits his services at the highest price, on the theory that he will probably give them better service than the other fellow. They generally take the one who will do the work for the least money.

It is the civil engineer that has been asking for protection for the public and for himself. So it was quite natural that the Michigan Engineering Society, which was made up very largely of civil engineers, should be the one that started the ball rolling in Michigan. They prepared a Bill which looked very good to them. It was not materially different from the Bill prepared by the American Society of Civil Engineers, and having gotten it in shape, as they thought, they presented it to the Detroit Engineering Society. The Detroit Engineering Society is the principal engineering organization in Detroit. It has a membership of about six hundred, just about half what it ought to be. But then it is more than any other association there has. Then the matter was referred to a committee upon which were represented not only civil engineers, but members of other professions, and it was not very long before they began to punch holes in that Bill. They endeavored to modify it until it would fit. Then they called a meeting to discuss it and they invited the representatives of all the engineering interests in Detroit and of the archietects to take a hand at the discussion of that Bill.

Somebody asked me to be present at that discussion. So I went in from Ann Arbor with a couple of other gentlemen from there and participated. We had not been in session more than about a half hour before it was very clearly evident that neither the Bill of the Michigan Engineering Society nor the revamped Bill, put in shape by the Detroit Engineering Society Committee, would stand a "ghost of a show" of approval by that body. There were somewhere between twenty and thirty representatives present of the different professions, and they were very decidedly not in favor of the Bill that they had before them.

Finally a representative of the architects, Professor Lorch, of the University of Michigan, got up and said, "Gentlemen, why not see if we cannot get together now and have one Bill that will take care of the architects and the engineers?" That was rather a new idea because nobody thought up to that time that the architects, who already had a registration Bill and were already registered, and who were amply protected, would be willing to be neighborly with the engineers. There were some of the engineers who really did not feel that they wanted to be included with the architects. But there were several of those present who thought it was a pretty good idea, that if we could get the architects and the engineers together behind the Bill there was a fair possibility that we could pass it, and we would see whether we could agree on anything. So we started out on fundamental things. The proposition was made, "Shall we have this in this Bill?" and it was discussed by everybody around and finally it was put to a vote as to whether that idea, not those particular words, but whether that idea should be incorporated in the Bill. By the time the afternoon was over, we had three main propositions that we were all agreed upon should go into the Bill. Then a committee was appointed to put them in, and that is where your humble servant got his foot into it, because they made him Chairman. We got the three propositions put into the Bill and reported it back on time, they having given us forty-eight hours, I think, to put it in shape. We met again and spent an afternoon in discussion, modifying the language and ideas, and then the Committee was continued with instructions to act as a steering committee, to see that the Bill was presented to the Legislature, and, if possible, that it was passed.

There was of course opposition in some quarters. Some people did not like the idea of being associated with the architects, Some people wanted a Bill that was different. And in fact there were two bills introduced in the Legislature, one of which was called the Engineers Bill and the other our bill, was called the Architects Bill, that is, it was called so by some people. But after a few hearings, in which the engineers of the State were pretty well represented, delegations from Detroit, Grand Rapids, Ann Arbor, Saginaw and Jackson participating, before the Legislature, the lawmakers became convinced that this combined Engineers' and Architects' Bill was really the Bill that the engineers wanted, and in due course of time, with divers and sundry modifications and re-writings, and with the incorporation into it, of some things which at the beginning it was not thought could possibly be gotten into a Bill and passed by the Legistature, the Bill was passed. What started out to be a Bill merely to protect the title and to see that no one should call himself an architect or engineer unless he was registered, became a Bill with real teeth in it.

I will just read a few passages from the Bill to give you an idea what it is, not that I consider this an ideal Bill by any means, but it may convey to your minds perhaps a little better than the language I have used, some of the things we have had in mind.

It starts off in Section 1:

"Any person who represents himself to be, and desires to practice as an architect or as an engineer or as a surveyor in any of the branches hereinafter mentioned in the State of Michigan shall be registered as hereinafter provided."

That is where we ducked the definition. We think we have "gotton by." If a man wants to call himself a contractor and do engineering work, we cannot stop him. If he wants to call himself a builder and not register, we cannot stop him. If he wants to call himself an engineer, if he wants to call himself an architect, if he wants to call himself a surveyor, he must come up and register.

Then follows the clause, the so-called Grand-

father's clause that we always have to put into these Bills, to provide for the fellow that has always been practicing, so that everybody who is an engineer now, can be an engineer forever after. And we did that this way. Of course the architects were already registered.

"Any person who shall have been qualified in this State to use the title "Registered Architect" before this Act takes effect, shall be considered as registered under this Act. Any citizen of the State of Michigan who shall have been engaged in practice as an engineer or surveyor as a principal, or in the responsible charge of design or supervision of engineering works for not less than two years before this Act goes into effect, shall be granted a certificate authorizing him to use the title of the branch of engineering in which he has been so engaged."

We hope that can be interpreted so that the fellow who has only been a country drainage engineer will not be posing as a hydraulic expert on the canalization of rivers. (Laughter.)

Now we come along to this classification. The language is not quite as I preferred to have it, but it is what we finally agreed upon as a matter of compromise.

"The Board shall have power to classify the applicants into the respective branches of engineering, as follows: Civil Engineer, Mining Engineer, Mechanical Engineer, Electrical Engineer, Chemical Engineer and Surveyor, and such other branches of engineering as the Board may consider subject to this Act and shall have authority to issue a certificate entitling the registrant to use the title of "Registered Civil Engineer," "Registered Mining Engineer," "Registered Mechanical Engineer," "Registered Electrical Engineer," "Registered Surveyor," or such other registered titles indicating more limited qualifications as the Board may designate, and to practice in the branch of engineering in which such person is registered, and further shall have power to issue certificates to persons qualifying under this Act," etc. "Nothing in this section shall prevent any person qualified hereunder from registering and practicing in all branches of engineering herein specified or in architecture. No person shall use the title of Registered Architect or Registered Engineer or Registered Surveyor or any variation of the same, or use any letter or device to indicate that the person using the same is a Registered Architect, a Registered Civil Engineer, a Registered Mining Engineer, a Registered Mechanical Engineer, a Registered Electrical Engineer, a Registered Chemical Engineer or a Registered Surveyor or any variation of the same * * * * after the first day of January, 1920, without being registered as an Architect or Engineer or Surveyor in accordance with the provisions of this Act. The Board shall, before issuing any such certificates, examine into the character and qualifications of the applicant to practice in the branch or division for which he makes application, and if satisfied that such applicant is a proper person and qualified so to do, then it shall issue the certificate for which the application has been made.

No person shall use any of the titles of Registered Architect, Registered Civil Engineer, Registered Mining Engineer, Registered Mechanical Engineer, Registered Electrical Engineer, Registered Chemical Engineer, or Registered Surveyor or any other registered title that the Board may designate unless he has been duly authorized to do so by the Board.

"Provided," now here is one of the holes—"that the provisions of this Act shall not apply to Engineers or Architects employed by railroads or other inter-state corporations whose employment is confined to such corporations, whether such employe is or is not a citizen of this State."

Of course that might or might not have been in. You probably will be forced to put in a similar clause in any act that you pass in the State of Ohio, and I do not know that there is any good reason why it should not be there, because that man is responsible to the Company that employs him. He is not going out and selling his services to the public. He is selling his services to them and they may be expected to have the ability to judge as to whether he is competent or not. So that, viewed from the standpoint of the protection of the public, to my mind that clause is not at all viatory of the benefits to be obtained from the bill.

We have gotten along so far now as the taking care of those who are practicing engineering at the present time or at the time the Act goes into effect. We fix it so that they all can be registered to do the kind of engineering they did before, and presumably no more, unless they prove to the Board that they possess qualifications for doing more.

Now here is how we take care of the rest of them, that is, those who will want to come in and practice in the future.

"Any citizen of the United States of legal age and of good moral character, who has had not less than six years of practical experience in architectural or engineering work or surveying under the direction or supervision of a registered architect or a registered engineer or a registered surveyor or of an architect or engineer or a registered surveyor or of an architect or engineer or surveyor of equivalent professional standing, or who is a graduate in architecture or engineering of a College or School of recognized standing, and who has had not less than two years of such experience under like conditions, who desires to begin the practice of architecture or engineering or surveying as a principal or in responsible charge of such work, may, upon the payment of a fee of five dollars apply for examination for a certificate under this Act, and before receiving such certificate shall satisfactorily pass an examination in the English language and in such other appropriate subjects as are established by the Board and satisfy it as to his practical experience and general standing and ability, and shall pay the fee hereinafter provided for the certificate of registration: Provided, that time spent as a student of architecture or engineering in a college or school of recognized

standing shall be considered the equivalent of an equal amount of practical experience."

There is one thing in that paragraph to which I wish to call attention, and that is that we have put the man who goes through college on a par with the man who obtains his training in the rough school of experience.

Our Nationel Societies, you will remember, take the Civil Engineers; I will not undertake to say what the others do, but take the Civil Engineers—the Civil Engineers say a man will be eligible for the grade of junior if he is a gradute of a school of recognized standing or if he has had two years' experience in an engineering party. In other words, if a young man wants to get into the American Society of Civil Engineers as quickly as possible, why the best way to do it is to go out and become an exam in a railroad party for a couple of years, and technically he can get in. And I may say that during my service on the Board of Direction we had a candidate present his qualifications for the grade of member, for the highest grade within the gift of the Society, and he appeared on the face of the record to meet the requirement of the constitution, until it was discovered that during two years of the time which he was counting in his ten years of experience, his work had been performed when he was between sixteen and eighteen years of age. There then was a lapse when he was not practing engineering and he afterwards came back and practiced some more and got ten years by the time he was of the requisite age to become a member, and put in his application. It is needless to say that he was not admitted on that showing. But I venture to say that men have gone into the Society when a very considerable portion of the experience upon which they went in was obtained before they were of age, under that clause which allows a two years' experience to make one a junior.

Here in this bill we put the two things on a par. We want six years out of both of them. You can put four years in college and two years in practice or six years in practice.

We have gone a step further and provided for the boy who goes part way through college but does not graduate, but goes out and goes to work. Under most of the rulings along this line that man's college training counts for nothing. Under this Act, you will notice it counts just the same, year for year, as though it were in practical work or as though he had gotten his degree. I call particular attention to that and I hope that when you come to draft a bill here, if you do, that there will be a similar provision in there to cover that case, because there are very many young men who go to college who are not able to complete their courses. They may be there one or two or three years, or perhaps three and a half years, but are not graduated, could not be admitted as graduates, but who nevertheless have had the benefit of that college training, and who, to my mind, after they have had the remainder of the time in practical experience are vastly better qualified to be engineers than the fellows who put in the whole six years in practical work.

Another very important provision for an Act of this kind is some sort of reciprocity clause, so that if an engineer comes into the State from another State where engineers are registered, comes in for temporary work, he will be permitted to practice. Here again, gentlemen, I have no sympathy with that sentiment of which I must confess there are some signs in the profession, that would shut the door to the non-resident of the State. I have no sympathy with that sentiment which would build a wall around a small group of engineers and say to those outside, "You shall not come in." I say again, if the engineers of the State of Michigan, the engineers of the State of Ohio, or the engineers of any other State or of the United States, cannot maintain their position in competition with the qualified engineers of other states and countries, then again, I am ashamed of the profession and I do not propose to stay in it. (Applause.)

Now what is the reciprocity clause that we have provided? After looking at numerous others, I think it is very good. I think it is better now than when it was adopted.

"The Board shall register architects and engineers of other states and of foreign countries to engage as principals in the practice of engineering in the State of Michigan when they are recognized as consulting specialists in some branch of their profession and have had at least ten years' experience as such, or when they present credentials showing that they have qualified for such work under equivalent laws of their own States or Governments and are still in good standing thereunder; Provided, That such laws extend similar privileges to registrants under this Act."

Now you note that there are two things there. In the first place we provide for the municipality that wants to call in a specialist or the corporation or the individual who wishes to obtain in the State of Michigan the services of a specialist in some subject from some other State, and the Board is authorized to register him on the showing of his qualifications. We then provide for the engineer who has already paid a registration fee in some other State qualifying him to practice under equivalent requirements or with equivalent qualifications, qualifying him to practice in a certain line of engineering; the Board is authorized to register him, provided, we say, that such laws extend similar privileges to registrants under this Act.

Now we put this provision, "Provided, That such laws extend similar privileges to the registrants under this Act." The real reason for that was to look out for Canada. The Canadians have a Registration Act that is an Exclusion Act. American Engineers do not stand a very good chance of doing engineering work in Canada, and yet the qualifications which they require would put them on a par with the qualifications which we are requiring here. For that reason we said that they would only receive this reciprocal treatment provided there was real reciprocity and they were willing to accord to us the privileges which we accord to them. I think on the whole the provision

is good. It calls the attention of other States enacting similar laws to the fact that they have to provide for this reciprocity, which I think is one of the essential things to be successful registration of engineers. The engineer knows no State lines and we should not endeavor to put up any artificial barriers that will prevent him going where his services may be most valuable.

Now that was about as far as we hoped to get with that bill when we started, but the State Highway Deparment, who was expecting soon to have a very large amount of money to expend on roads and was fearful that it might be swamped by local politicians desired to have some further protection and as a result of that after several conferences the following was agreed upon and with the support of the Committee on Highways in the Senate the bill was passed with these provisions in it. And I will say to you that if any of the rest of you can get them in I think you will agree with me they are good things to have there but to my mind the bill as a registration bill was complete without them by stopping just about where I have stopped at the present moment. But here are teeth and claws.

"After the first day of March 1920 neither the State nor any County Township Municipality or Village shall engage in the construction or maintenance of any public work of an architectural or engineering character for which construction or maintenance the plans or specifications and estimates shall not have been prepared by a Registered Architect or a Registered Engineer under this Act with qualifications pertaining to such work, and the construction of which is not supervised by such a registered architect or registered engineer: Provided, That nothing in this section shall be held to apply to items of maintenance, repair or construction wherein the contemplated expenditure for the completed project does not exceed two thousand dollars."

Now that pretty nearly takes care of the engineering of public works, doesn't it? (Laughter)

"After the first day of March, 1920, no City or Village plat, or plat of an addition thereto or of a sub-division thereof, or any plat dividing land into streets, lots, or blocks shall be received for record which has not been prepared by a registered engineer or a registered surveyor and signed by him as such."

Then came one of those things that gets slipped in from time to time as a concession to somebody who has a client somewhere and we got this, which to my mind is not essential to the Act, but happens to be there and we may as well give it to you.

"Nothing in this Act shall prevent any person from doing any of the engineering, architectural or surveying work mentioned herein upon or in connection with residence buildings, barns, or garages or other private buildings." So that a man is permitted to build his own house, of course, as he ought to be, and he is permitted to build his neighbor's house if his neighbor will let him. He can build for himself or his neighbor, chicken-coops, corn-cribs, and all that sort of thing, but when it comes to the structures in which the public is really interested, he must be registered under this Act.

Those, gentlemen, are the essential provisions of the Michigan Bill. I think that practically all of them are desirable in a Registration Act. It may be doubtful as to whether you can get them all. I doubt very much if you can get the last two, but conditions were peculiar in Michigan. They may be the same in Ohio. They may be the same in other States. And if your Commissioner of Highways is wise, he will be glad to see such a provision enacted, because that enables him to get the right kind of help, the kind that he wants, to carry out the work of his department.

I thank you gentlemen. (Applause.)